



HEALTHMET Project

Capacity building for the establishment of links
between weather, climate and health
services.

WA NMHSs Conference #04
Ilha Sal, March 2011



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Outline:

- Background: Banjul Action Plan
- Report: Activities Carried Out
 - Results
- Information: National Health and Climate Working Groups (NHCGWs)
- Plans: Future Activities

Banjul Action Plan:

Action 2.3 HEALTHMET: "Support to the development of the activities of the National Health-Climate Working Groups (NHCWG) in participant countries (*Burkina Faso, Mali, Mauritanie, Niger, Nigeria*) in accordance with the main outputs of the Niamey Workshop (October 2009) on reinforcement of links between Weather, Climate and Health"

- “Information gathering: on the current status of collaboration between health and met in each country”
- “National Seminars: Enhance and initiate NHCWG activities as applicable to each country and develop a short term national action plan to implement activities”
- “Training: Capacity building at regional and national level”
- “Fund raising activities: Respond to Banjul Action Plan”

Activities Carried Out:

- Information gathering: Appointment of the two focal points per country. A representative of the NMHSs and another from the National Health Authority.
- National Seminars: Underway planning of the kick-off meeting in Mauritania and Burkina Faso.
- Training:
 - Specialized training of two regional experts at the IRI Summer Institute, May 2010.
 - Training course on WMO SDS-WAS Products at the Barcelona Supercomputing Center for the five local Focal Points , November 2010.
- Fund raising activities: will come from the NHCWGs.

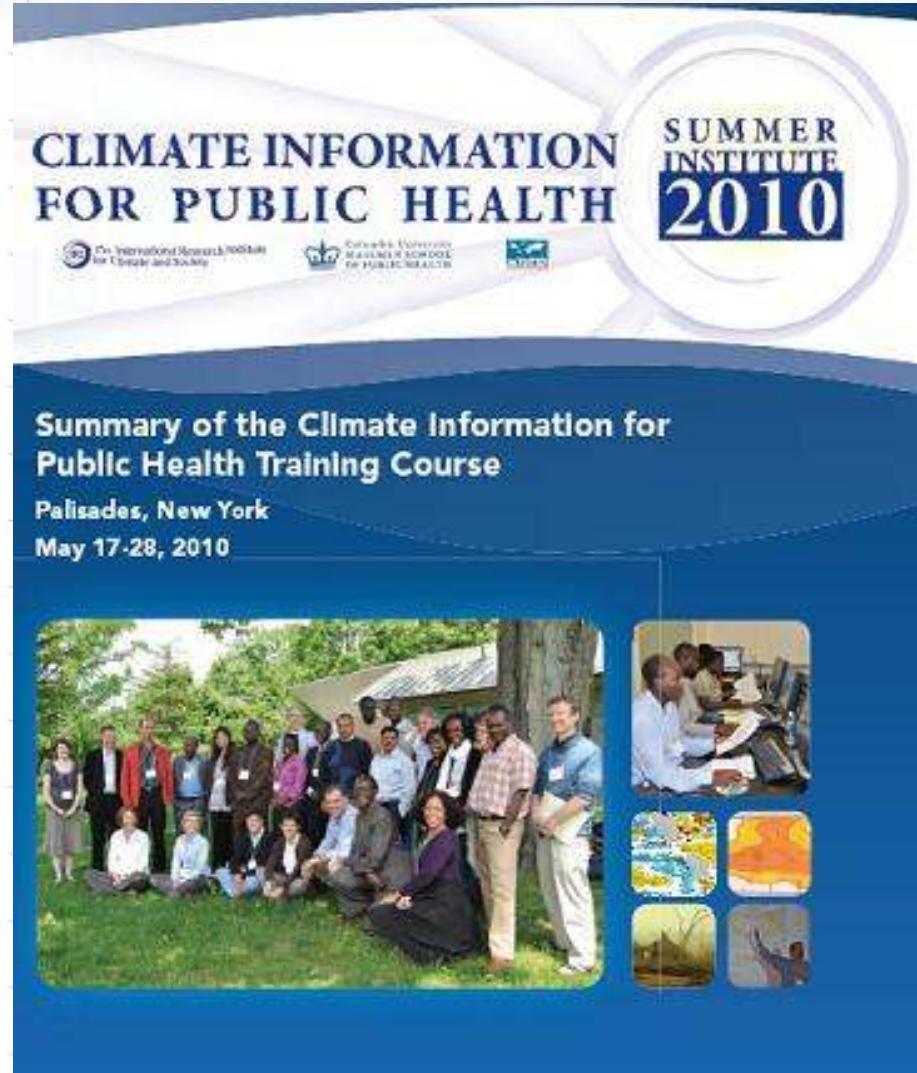
- Appointment of the focal points:

Action taken by WMO and NMHSs in the middle of 2010.

This marks the start of the project because it helps establish (or strengthen) a formal contact between the two institutions to develop projects together.

COUNTRY	METEO FP	HEALTH FP
Burkina Faso	Dr. Pascal Yaka	Mr. Felix Targbando
Mali	Mr. Sekou N'Faly Sissoko	Mr. Sory Ibrahima Bouaré
Mauritanie	Mr. Sidi Ould Mohamed Lemine	Mr. Sidi Mohamed Lemine
Niger	Mr. Katietlou Gaptia Lawan	???
Nigeria	Mr. Cyprien Umezulike Okoloye (confirmation pending)	???

ACTIVITIES CARRIED OUT: Specialized Training



Organized by:

- International Research Institute for Climate and Society (IRI), with
- Mailman School of Public Health
- Center for International Earth Science Information Network.

Afrimet participants:

- Dr. Pascal Yaka, Burkina Faso.
- Mr. Mouhaïmouni Moussa, Niger.

Healthmet project will count on both of them as regional experts.

Summary and posters are available at www.afrimet.org to other participants in the project and to the Conference of Directors.

Relationships between climate and year-to-year variability in meningitis outbreaks: a case study in Burkina Faso and Niger

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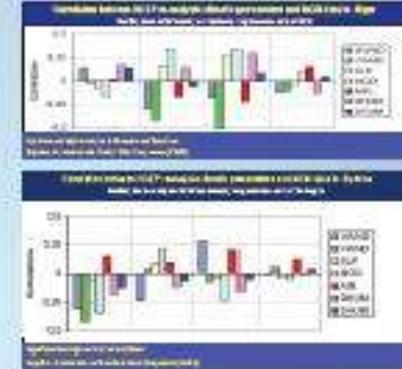


BACKGROUND

Every year, West African countries are affected with Meningocephalitis (MC) disease outbreaks. Although the seasonal and spatial patterns of disease cases which occur mostly during winter in the "meningitis belt" are directly linked with climate variability, the mechanisms responsible for these observed patterns are still not well identified. This is particularly true for the linkage between epidemic intensity from year to year and climate variability.

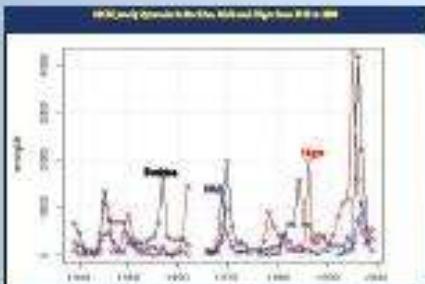
RESULTS

MC Group disease emergence in Niger and in Burkina Faso is likely to be partly modulated by the winter climate through enhanced transmission while distribution is based on only climate index patterns well in Niger, showing that 80% of the disease outbreak from year-to-year in Niger is explained by the winter climate, but 50% is represented annually the disease dynamics in Burkina Faso.



PURPOSE AND HYPOTHESIS

The objective of this study is to investigate the role of climate on the triggering of MCW outbreaks by using a long-term dataset and to explore the possibility to predict the disease incidence as a function of the previous epidemic. To do so, we start by defining a prior hypothesis on the causal link between climate and disease. Our hypothesis based on literature, is as follows: dry and windy weather conditions in early winter might cause damage to the mucous membranes of the respiratory system and/or facilitate spread. Incomes and their create propitious conditions to the triggering of MCW epidemics. According to this hypothesis, if the role of climate is strong enough, we should observe a positive correlation between the number of these particular winter conditions (strong north-westerly wind, high pressure and dryness) and the MCW incidence.



CONCLUSIONS



The encouraging results of such simple models justify the development of a survey and an early warning system of MCW epidemics in African Sub-Saharan countries. Although it yields not significant statistical results, it stresses the difficulty of relating climate to interannual variability in meningitis outbreaks. These outcome survey and forecast model help national and international public health institutions to better control MCW disease.

MATERIALS AND METHODS

Annual correlation maps of meningitis (WHO-MC) from 1980-2004 were used. We select 7 variables that are likely to influence MCW disease outbreaks according to the literature: Wind velocity (mean and wind-speed), wind speed, sea-level pressure, Relative temperature, specific humidity, humidity ratio, surface.

The incidence of MCW has previously been correlated with dry and dusty conditions. For each country, we compute the correlation coefficients between each of the 7 atmospheric values for one month and the meningitis annual lag-1 incidence rate of Burkina Faso.

BIBLIOGRAPHY

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- Pearce WM, (2005) Definition of Meningo-Encephalitis. Management and Materials in Clinical Practice. *Principles of Treatment in Meningo-Encephalitis*. Springer.
- WHO (Joint United Nations Children's Fund/Malaria Management Disease, 2007)
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- WHO (2004) Report on Global Surveillance of Epidemiological Collective Disease.



MORTALITY AND CLIMATE VARIABILITY AT THE NATIONAL HOSPITAL OF NIAMEY FROM 1998 TO 2008

M. MOUSSA, NATIONAL METOFFICE OF NIGER, D/ D. MAIGA NATIONAL HOSPITAL OF NIAMEY NIGER



BACKGROUND

Objectives:
Determining the relationship between mortality, mean monthly temperature as a cause of death's rate.
- To compare mortality rates with monthly variability, and epidemic rates and different types of winter climatic associations.
- To use these various meteorological indices (high pressure systems, low pressure systems, mean monthly, minimum and maximum temperatures) as causes of death, and can serve to predict.

Observations:
- During the last decade confirmed fatality cases (April and early May 2008) in the capital city have resulted in many children and elderly, in the capital of Niamey.
- On average 40 deaths per day occurred daily during the last year with peaks reaching up to 100.



PURPOSE AND HYPOTHESIS

Objectives:
The aim of this study is to compare the fatality rates caused by extreme temperatures in order to identify seasonal trends and a rate of very strong relation among extreme weather and mortality.

Hypothesis:
The goal is to establish a study model that can allow to predict the evolution of mortality rates due to death.

MATERIALS AND METHODS

Methods:

- Daily mean of death data (1998 to 2008) recorded daily by the regions and provinces of Niamey as the main responsibility of the health ministry at the point of time.

- Daily mean of extreme temperature data (1998 to 2008) recorded daily.

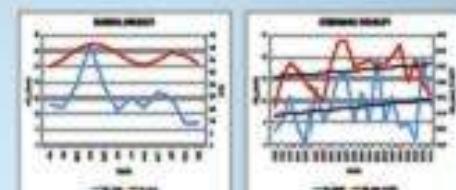
Modeling and analysis was done using a step-wise logistic of the extreme temperature from January to June to predict mortality rates.

This allows us to compare the type of extreme weather, mean monthly and seasonal mortality rates with the number of deaths in the capital of Niamey.

Results:
- Statistical Descriptions for reporting data for each month:
- 1998-2008, raw data processing
- 1998-2008, raw data filtering the outliers

RESULTS

The analysis of the figure below shows that:
- The mean of the maximum temperature and the number of deaths mortal in the year map during the year (see Table 1 variability).
- At minimum are positive to overall years (see the maximum temperature associated)
- After the death rates are 20°C and the number of deaths increase with the number of extreme temperatures greater than the peak year of the study period (December variability).
- The percentage of maximum temperature greater than the total mortality as seen on the number of deaths in the year.



CONCLUSIONS

After the analysis of the figure above the following conclusions can be drawn:
- After the cooling down and winter in the study period (see the maximum temperature associated)
- There is a link between the maximum temperature and the number of deaths through the year (see the death rate in December).

Number of deaths / death rate in Niamey by the maximum temperature by the following linear regression:

1998-2008, raw data processing
1998-2008, raw data filtering the outliers

1998-2008, raw data filtering the outliers
- The number of deaths in Niamey for the whole hospital, the rate of dying would be 12000, with death of children, as (Patrons, Men, And, Men, Women, Children) estimated by the Bureau epidemiologic of Niamey as follow of each year:

BIBLIOGRAPHY

- See previous section signs and references information file.
- See previous section identifies the geographical areas and also some other reference: www.cdc.gov/nchs/about/index.htm
- Journal of the International Society of Traumatology, 2008, 23 April 2008
- Journal of the International Society of Traumatology, 2008, 23 April 2008

Training Week on WMO SDS-WAS Products

- **Date:** 15-19 November 2010
- **Coordination:** Enric Terradellas (AEMET)
- **Local organizer:** Barcelona Supercomputing Center (BSC), Agencia Estatal de Meteorología (AEMET)
- **Funding** (in alphabetical order):
 - Agencia Estatal de Meteorología (AEMET)
 - Barcelona Supercomputing Center (BSC)
 - European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT)
 - World Meteorological Organisation (WMO)
- **Participants:**
 - Focal points of the Healthmet Project in Burkina Faso, Mali, Mauritania, Niger and Nigeria (5)
 - ACMAD (1)
 - Participants of North Africa and Middle East Asia (7)
 - Others (1)
- **Venue:** Barcelona, Spain

ACTIVITIES CARRIED OUT: Training on SDS-WAS Products



Agenda:

- Opening. Practicalities. The WMO SDS-WAS programme (1 hour). E. Terradellas
- Physical processes of sand and dust removal and transportation (1 hour). Y. Shao
 - Physical and chemical characterisation of dust (1 hour). Y. Shao
 - Sand and dust concentration estimations with SEVIRI (2 hours). Y. Govaerts
 - Dust estimation based on infrared images (2 hours). J. Prieto
 - Ground based observation of dust (2 hours). E. Cuevas
 - Dust forecasting models (2 hours). S. Basart
 - Dust variability (1 hour). I. Tegen
 - Dust-climate interactions (1 hour). I. Tegen
- Practical sessions (6 hours). J. Prieto, J. Kerkmann, E. Cuevas
- Technical visits (5 hours). X. Querol, A. Comerón, Á. Rincón
- Presentations of participants (4 hours). E. Terradellas
- Conclusions. Closure (1 hour). E. Terradellas

Report on the training course available on afruit files

Results of the post-course survey:

- The five countries have found the course useful for their work.
- Mauritanie reports daily work with satellite images and outputs of models in order to monitor the atmospheric dust.



National Health and Climate Working Groups

- **Mission:** promotion and implementation of joint activities of their institutions, directed to the acquisition and use of data and weather, climate and health information for the management, prevention and fight against climate sensitive diseases.
 - To propose projects.
 - To monitor them.
 - To help in seeking funding.

This group is not dedicated to research but to operational activities.
- **Diseases targeted:** according to the Banjul Action Plan, NHCWG will initially target mainly two diseases:
 - Meningitis
 - Malaria
- **Organization:**
 - Activities and coordination conducted by the two focal points, with the supervision of their Directors.
 - The membership must be adjudicated before the first meeting. The composition must be open.

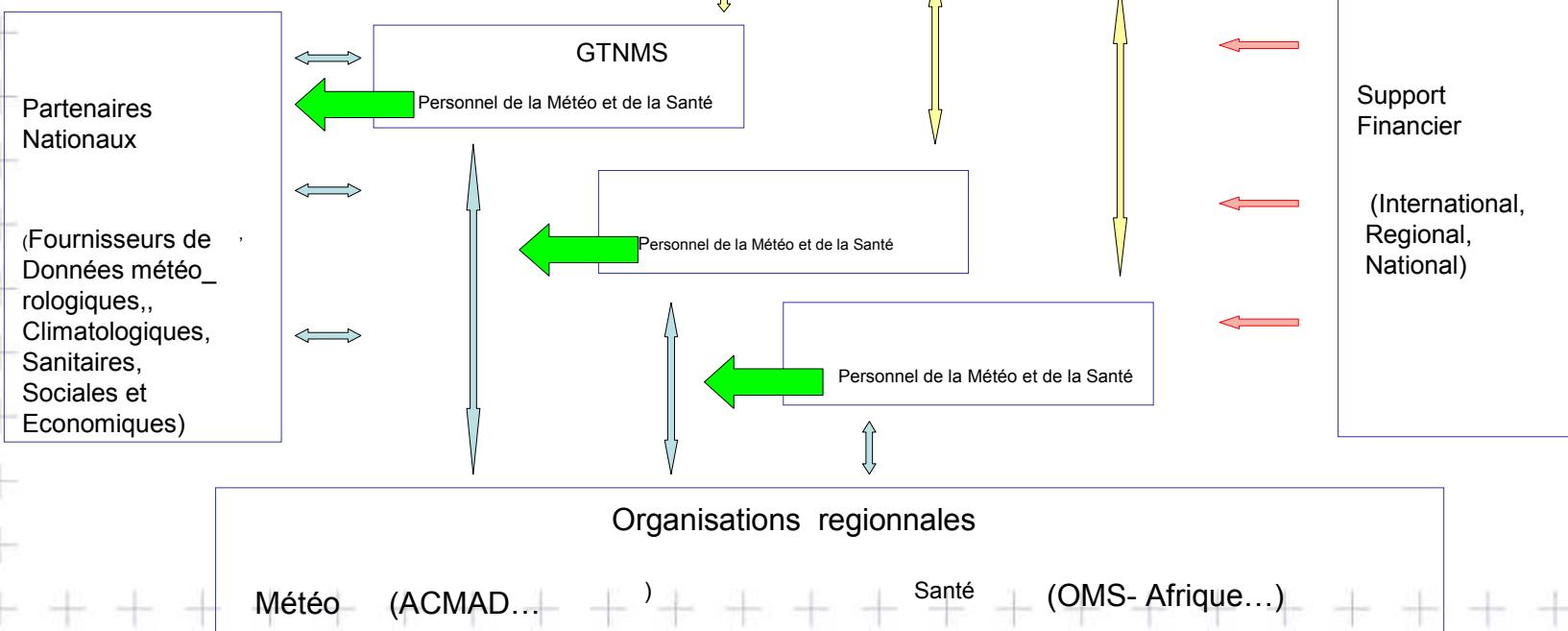
Cadre de Référence : Partenariat Climat – Santé pour l'Afrique

OMM - OMS

Comité directorial

OMM, OMS, AEMET

...



- **Terms of Reference**

- Identify the needs of Health Services in terms of data, information and services on weather and climate.
- Identify inconsistencies and problems that handicap the use of routine information on weather and climate in the Health sector.
- Formulate a protocol for exchanging data between both sectors.
- Identify needs for research in Climate and Health issue.
- Identify needs in education and training.
- Facilitate access to tools on weather and climate in the Health sector.
- Increase use of early warning systems for climate-dependent disease prevention.
- Increase and strength the capacity of national, local and community organizations in this area.
- Establish an Internet access secure database on Climate and Health.
- Organize, and present policy makers with, the scientific evidence on the impacts of climate change and climate variability on health.
- Organize an annual workshop on Climate and Health issue.
- Collaborate with similar entities throughout the region to share experiences and ideas.
- Mobilize resources to ensure sustainability of this Project.

TERMES DE REFERENCE DE LA CELLULE CLIMAT ET SANTE

MAURITANIE

L'impact du temps et du climat sur la santé est actuellement une question préoccupante pour l'ensemble des pays africains. Le climat présente un impact direct ou indirect sur les maladies transmissibles comme le paludisme, la méningite, la fièvre du Rift et d'autre maladies à caractère diarrhéique comme le cholera.



MEMBRE DU GROUPE DE TRAVAIL

- A.** Direction Générale de l'Office National de la Météorologie (DGM),
- B.** Direction des Urgences et de la Lutte contre les Maladies
- C.** Hôpital National
- D.** Hôpital Cheikh Sayed,
- E.** Direction de l'Hydrologie
- F.** Direction des Services Vétérinaires
- G.** Organisation Mondiale de la Santé (OMS),
- H.** United Nations Children Fund (UNICEF),

MISSION DE LA CELLULE CLIMAT SANTE

Promouvoir l'utilisation des informations météorologiques et climatiques pour améliorer la prévention et la lutte contre les maladies épidémiologiques sensibles aux variations climatiques.

OBJECTIFS DU GROUPE DE TRAVAIL

1. Renforcer le réseau d'observations météorologiques et climatiques pour répondre aux besoins du secteur santé.
2. Intégrer les données et les informations météorologiques et climatiques dans les plans d'action de prévention et de lutte contre les maladies sensibles au climat.
3. Développer la recherche dans le domaine et établir des relations entre le temps, le climat, l'eau et les maladies et dégager des recommandations qui permettent d'atténuer les effets néfastes de ces maladies

TACHES DU GROUPE DE TRAVAIL

1. Recenser les besoins du secteur de santé en matière de données météorologiques et climatiques, faire le point sur les lacunes constatées dans ce domaine et formuler des recommandations pour y remédier.
2. Instituer un système de partage des données entre les deux secteurs santé et météo ainsi que les autres institutions et partenaires.
3. Mettre en place une base de données intégrée.
4. Renforcer le système d'alerte précoce pour les maladies liées au temps et au climat.
5. Elaborer des stratégies efficaces et fonctionnelles en vue d'une utilisation des informations météorologiques et climatiques pour le secteur santé,
6. Elaborer et diffuser des messages appropriés auprès des décideurs et des utilisateurs.
7. Obtenir la collaboration avec les partenaires du secteur climat/santé dans la planification et la mise en œuvre.
8. Organiser chaque année un atelier sur les questions relatives au temps, climat et santé,
9. Rassembler et soumettre aux décideurs des éléments scientifiques qui attestent de l'incidence de la variabilité du climat sur la santé.
10. Mobiliser les ressources auprès des donateurs pour renforcer les capacités nationales, régionales et locales.
14. Soutenir et coordonner les activités de recherches dans le domaine.

Kick-off meeting objectives:

- Establish the Working Group and validate the TOR.
- Highlight the direct or indirect impact of climate on disease, and the interest in the use of weather and climate information to improve preparedness and response to humanitarian emergencies that might arise.
- Develop an action plan for twelve months:
 - List of actions
 - Actors (stakeholders) at national level and their partners at regional and international level.
 - Needs of internal (from the country) and external (regional, or international cooperation) resources.

Membership of the Ministry of Health and WHO in this process is essential.

Resource mobilization:

- The NHCWG will send to the WMO and AEMET focal points their **needs**.
- The NHCWG will be in contact with the **local authorities** of each country to coordinate national and international support.
- The involvement of **technical and financial partners** is crucial.
- Potential funding and/or technical partners:
 - States involved
 - World Health Organization (WHO)
 - Organisation Ouest Africaine de la Santé (OOAS)
 - Multi-Disease Surveillance Center (MDSC)
 - UNICEF
 - World Meteorological Organization (WMO)
 - United Nations Development Programme (UNDP)
 - World Bank (WB)
 - Institut de Recherche pour le Développement (IRD)
 - ACMAD
 - International Research Institute for Climate and Society (IRI)
 - Health and Climate Foundation
 - Group on Earth Observations (GEO-GOESS)
 - AECID (Spanish Agency of International Cooperation for Development)
 - AfDB(African Development Bank)
 - International Monetary Fund (IMF)
 -

Planned and potential activities in 2011:

- Start of NCHWGs activities in Burkina Faso and Mauritania.
- Provision of information on these pilot experiences to the other Healthmet partners.
- Preference for local and regional training, using experts and trained persons.
- Attendance of a member of the NMHSs to the next editions of the courses SDS-WAS Products / Public Health can be taken into consideration.
 - Scheduled next edition of the course on SDS-WAS Products in late November in Antalya (Turkey) or Barcelona (Spain)
 - Prior online course on dust detection from satellites, by Eumetsat, that will be open to all interested.

Both activities will be timely announced at www.sds-was.aemet.es

Thanks for your
attention.

Questions and comments?

